

REMARKS:

Applicant herein responds to office correspondence dated 8/14/2002. Office restricted claims into two claim sets, (I.) claims 138-198, drawn to a woven article, class 442, subclass 199, and (II.) claims 199-201, drawn to a method of forming a fiber bundle, class 57, and proceeded with claim set (I.) based on applicant's telecon provisional election with traverse. Applicant affirms the election.

Office has rejected Claims 166, 175 and 194 under 35USC112(2nd) regarding indefinite range. Applicant has amended these claims to remove the indefiniteness, thereby curing this rejection.

The examiner has rejected claims 138 - 141, 147-191, and 194-198 under 35USC103(a) "obviousness" as being unpatentable over Fels et al's '457 in view of Howland's '264. Applicant asserts Fels cannot properly be associated or combined with Howland's '264 for this purpose, and requests it be withdrawn.

It is useful to note a point which is understood by those skilled in the art. The weave densities and cover factors introduced in the Howland '264, the context in which the present claims are cast, are well recognized by those skilled in the art as a significant departure from the prior art of lower density weaving of protective fabrics; a new weaving range, structure, and complexity for which the limitations of many techniques common in lower density weaving simply make them irrelevant, without inventive effort.

Fels presents a spiral wound sheath over a core filament, composite yarn structure as a means for obscuring its high strength core filament of the yarn from exposure. Applicant asserts that Fels is clearly distinguishable from the claimed invention of blended fibers, and not a reasonable candidate for one of ordinary skill in the art for combination with Howland's '264. Fels deals with and is limited to a much different class of fibers; specifically composite fibers of different construction and greater weight range or titer, suitable only for relatively low density weave construction. Fels states expressly that the DREF2 process is only suitable for making

coarser yarns, in deference to his preferred embodiment DREF3 process. But even this process is likewise limited to making very large diameter or heavier fibers and yarns, relative to the Howland '264 weave densities and cover factors.

For example, Fels states at col.5, line 60 that "yarns with titer ranging from 200 to 4000 dtex are preferred." His claim 1 is even more restrictive, ranging from 600 to 4000 dtex. The meaning of Fels "dense fabric construction" in the context of his specification clearly is not the same as in Howland's 70 by 70 weaves and high cover factors. As would be expected by one of ordinary skill in the art, Fels own examples support this limitation, citing thread counts of 6-12 per centimeter (18 - 31 ends per inch). The Fels sheath and core structure is in fact inoperative and unuseful at the scale of the Howland '264 where the weave density has more than double the threadcount at 70 ends per inch and higher. There is no reason or motivation for one of ordinary skill to combine Fels with the Howland '264 art of very high density weaving and high cover factors to achieve the objects of the claims herein. Applicant requests Fels be withdrawn, curing this rejection, and asserts the claims as amended to be otherwise in condition for allowance.

Furthermore, the spiral wound sheath over a core filament structure of Fels is incompatible and inconsistent with the intimate blend technique and structure taught by this Applicant, wherein fibers of two types are "laid together" (page 10, line 21) substantially in parallel (Figs. 3A and 3B) within a single fiber bundle or within adjacent fiber bundles of a plied yarn (page 21, line 22), or within adjacent yarns. To further avoid any unintended reading of its claims on Fels, the intimate blending of the two fiber types implicit within the Applicant's claims and fully supported in the specification is further circumscribed by amendments to independent claims 138, 169, and 170, to include a substantially parallel orientation of the specified fibers, contradicting the inherent structure of the Fels wrapped core structure. This should likewise cure this rejection and place the affected claims as amended in condition for allowance.

The Office rejects claims 138-141, 147-191, and 194-198 under 35 U.S.C. 103(a) as being unpatentable over Opitz in view of Howland. Applicant invokes its Fels comments with respect to Opitz and its wrapped sheath on core filament structure. Opitz's examples again teach

very large yarns, in the order of 900 Denier. The sheath and core technology of Opitz is likewise fundamentally not operable and not useful in the Howland '264 context, and hence offers no reason or expectation of success in its combination to one of ordinary skill in the art to achieve the herein claimed invention. Applicant requests it be withdrawn for this reason, thus curing this rejection and placing the claims as amended in condition for allowance.

The examiner has also rejected claims 142-146 under 35USC103(a) "obviousness" as being unpatentable over Opitz or Fels in view of Howland and further in view of Toon's 548. Applicant invokes its prior comments with respect to the sheath and core structures of Fels and Opitz, as generally applicable to Toon in all relevant respects. It is beyond comprehension to this Applicant how Toon could be asserted to be useful in combination with the high density weaves of Howland's '264 to one of ordinary skill in the art to achieve this Applicant's results as herein claimed. Applicant respectfully requests Toon be withdrawn, and asserts the claims as amended to be otherwise in condition for allowance.

Finally, the office has rejected claims 192 and 193 under 35 USC103(a) as unpatentable over Opitz or Fels in view of Howland and further in view of Prickett's '885. Applicant again invokes its prior comments with respect to Fels and Opitz, and respectfully requests these specimens be withdrawn from this combination for the same reasons, thus curing this rejection and placing the claims as amended in condition for allowance.

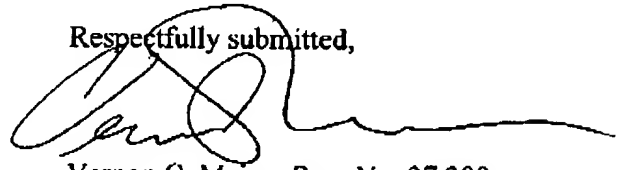
Furthermore, Prickett prefers yarns of 550 to 4700 dtex, offers examples at 4 end and 6 end weave densities, and would to one of ordinary skill in the art be likewise vastly unuseful in the context of the Howland '264 weave densities and cover factors for achieving the Applicant's results as herein claimed. Yet further, Prickett offers nothing to otherwise unify the unrelated art of Opitz or Fels to Howland's '264. Applicant requests Prickett be withdrawn from combination with Howland's '264, and from combination with either or both of Fels and Opitz also, thus curing this rejection and otherwise placing the claims as amended in condition for allowance.

An inventor's Rule 1.132 Statement in support of this response will follow shortly.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance. No new matter is added. Applicant requests speedy reconsideration, and further requests that Examiner contact its attorney by telephone, facsimile, or email for quickest resolution, if there are any remaining issues.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Claims 199 - 201 have been cancelled

Claim 138 has been amended as follows:

138. (Amended) An article comprising:
a plurality of fill yarns and warp yarns woven to form a fabric having a fill yarn round packed cover factor of at least about 75% and a warp yarn round packed cover factor of at least about 26%, the fabric including therein in at least one of warp and fill directions at least one fiber of a first type and least one fiber of a type different from the first type oriented substantially parallel to each other within said fabric.

Claim 166 has been amended as follows:

166. (Amended) The article as in claim 165, wherein the fiber bundle is characterized by a primary twist multiplier of at least about 2.7[to at least about 5, and preferably at least about 4].

Claim 169 has been amended as follows:

169. (Amended) A method comprising the step of:
weaving together a plurality of fill yarns and warp yarns into a woven fabric having a fill cover factor of at least about 75%, a warp yarn cover factor of at least about 100%, and including therein within at least one of fill and warp directions at least one fiber of a first type and at least one fiber of a type different from the first type oriented substantially parallel to each other within said fabric.

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Claim 170 has been amended as follows:

170. (Amended) An article comprising:
a fiber bundle formed of a plurality of substantially parallel fibers including at least one fiber of a first type having a tensile breaking strength of at least about 10 g/Denier, the fiber bundle having a length per unit weight exceeding about 50 Cotton Count and a weight per unit length less than about 106 Denier.

Claim 175 has been amended as follows:

175. (Amended) The article as in claim 173, wherein the fiber of the second type has a tensile breaking strength less than about 8 g/Denier[, preferably 3-8 g/Denier].

Claim 194 has been amended as follows:

194. (Amended) The article as in claim 191, wherein the fiber bundle has a primary twist multiplier of at least about 2.7[to at least about 5, and preferably at least about 4].